$CH_3CH_2CH_2OCH_2CH_3$ – Ethoxypropane

$CH_3CH_2OCH_2CH_3$ – Ethoxyethane

CH_3CH_2OCH – Methoxyethene

2. i) Physical State: At room temperature ethers are colourless, neutral and with pleasant odour. and lower diethers ethers are highly flamable.

ii) Solubility: ethers are less soluble in water than corresponding alcohols

iii) Density: With same alkyl ethers are less dense than water but the density increases with increasing R.M.M and some aromatic ethers are denser than water

iv) Boiling point: lower molecular mass ethers have a lower boiling point than the corresponding ethers

v) ethers are inert at moderate temperature

3. Partial dehydration of alcohols

Simple ethers are manufactured from alcohol by catalytic dehydration. the alcohol in excess and concentrated tetraoxosulphate (vi) acid is heated at a carefully maintained temperature of 140°c the process is known as Intermolecular dehydration. If excess alcohol is not used, the temperature is as high as 170-180°c further dehydrated to yield alkenes occurs

$$2ROH \xrightleftharpoons{\text{Conc } H_2SO_4,\ 140^\circ C} R-O-R + H_2O$$

ii Controlled Catalytic hydration of alkenes

$$2C_2H_4 + H_2O \longrightarrow (CH_3)_2CH-O-CH(CH_3)_2$$

iii from Halogenoalkane and dry silver (i) oxide

$$2RX + Ag_2O \xrightarrow{\text{warm}} R-O-R + 2AgX$$

Uses of ethylene oxide

1 It is used as an intermediate in the industrial manufacture of ethylene glycol.

2 Ethylene oxide is used in preparation of non-ionic emulsifying agents, plastics and several synthetic detergents

Effects

3 ethylene oxide is used as a gaseous sterilizing agent.